

CLAIMS

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1. Apparatus for distribution of digitized image, of either still or motion type, information to viewing locations comprising:
 2. at least one central facility for receiving and compressing digitized image information according to a preselected format;
 4. means for transferring resulting compressed image information to one or more remotely located presentation systems, each presentation system comprising:
 6. means for receiving and storing transferred image information for presentation at at least one preselected time;
 8. means for distributing stored compressed image information to one or more decompression systems;
 10. means for decompressing transferred image information in each decompression system; and
 12. at least one projection system connected to receive decompressed image information and present visual images to one or more viewers based on said received information.

2. The apparatus of Claim 1 wherein said at least one central facility is further configured for receiving and compressing digitized audio information according to a preselected format, and each said presentation system comprises:
 4. means for distributing stored compressed audio information to one or more decompression systems;
 6. means for decompressing transferred audio information in each decompression system; and
 8. at least one sound system connected to receive decompressed audio information and to present it to one or more listeners based on said received information as part of a presentation event.

3. The apparatus of Claim 2 wherein said compressed image and
2 audio information are each stored in a non contiguous manner independent of
each other.

4. The apparatus of Claim 1 wherein said compressing of said
2 digitized image information occurs at a variable rate.

5. The apparatus of Claim 2 wherein said compressing of said
2 digitized audio information occurs at a variable rate.

6. The apparatus of Claim 2 wherein said compression of information
2 is performed remotely from the central facility.

7. The apparatus of Claim 2 further comprising means for
2 compressing and transferring audio programs associated with image
information segregated in time from an associated image using an identifier to
4 allow linking of one or more preselected audio programs with at least one
preselected image program as desired at presentation.

8. The apparatus of Claim 7 wherein each of said audio programs
2 comprise multiple audio tracks to be presented with the same image program
during different presentation events.

9. The apparatus of Claim 1 further comprising a digital image
2 generation system for generating images in digital format.

10. The apparatus of Claim 9 wherein said generation system
2 comprises a digital camera.

11. The apparatus of Claim 10 wherein images from said digital camera
2 are captured, compressed and broadcast in real time to preselected authorized

presentation systems by said central facility substantially contemporaneous with
4 digitizing of images.

12. The apparatus of Claim 9 wherein said generation system
2 comprises a Telecine device.

13. The apparatus of Claim 9 wherein said generation system
2 comprises a computer based workstation.

14. The apparatus of Claim 2 further comprising means for storing
2 compressed image and audio information in said central facility for transfer at a
later predetermined time.

15. The apparatus of Claim 2 further comprising means for encryption
2 of said information and said presentation system comprises means for
decryption of encrypted information.

16. The apparatus of Claim 15 further comprising means for providing
2 cryptographic key information necessary for decryption of information to
authorized presentation systems at a separate time from encrypted information
4 itself.

17. The apparatus of Claim 15 further comprising means for storing
2 and transporting cryptographic key information necessary for decryption to
authorized presentation systems at a time separate from transfer of encrypted
4 information.

18. The apparatus of Claim 17 further comprising means for indicating
2 a time interval over which said cryptographic key information is valid and for
assuring that said key is only used during that interval.

19. The apparatus of Claim 18 further comprising means for
2 overwriting said cryptographic key information in a storage location after said
time interval expires.

20. The apparatus of Claim 2 further comprising means for adding at
2 least one watermark which is perceptually unnoticeable during presentation of
4 decompressed image or audio information at a predefined normal rate of
transfer, but is detectable when said image or audio information is presented at a
rate substantially different from said normal rate.

21. The apparatus of Claim 20 wherein said watermark identifies both
2 presentation time and location for image or audio information.

22. The apparatus of Claim 2 further comprising a modulation and
2 transmission system for establishing a wireless communication link over which
4 compressed information is transferred between said central facility and
presentation systems.

23. The apparatus of Claim 22 wherein said transfer comprises
2 broadcasting of said compressed information to any one or more of a plurality of
4 auditoriums to allow multiple presentations of information in different
auditoriums at the same time.

24. The apparatus of Claim 22 wherein a transmission bit rate of
2 compressed information is not equal to a bit rate at which said information is
compressed.

25. The apparatus of Claim 22 wherein a transmission bit rate of
2 compressed information is equal to a bit rate at which said information is
compressed.

26. The apparatus of Claim 22 wherein additional checksum
2 information is appended to said compressed information so as to allow detection
of blocks of transmitted information in which transmission errors occur.

27. The apparatus of Claim 22 wherein said means for transfer
2 comprises at least one satellite.

28. The apparatus of Claim 27 further comprising at least one
2 collocated satellite receiver terminal at said central facility for monitoring quality
of a satellite channel used for transferring compressed information so as to allow
4 adjustments in transfer characteristics of said satellite channel to maintain a
desired level of quality.

29. The apparatus of Claim 2 further comprising a two-way transfer
2 link disposed between said central facility and presentation systems over which
data is exchanged.

30. The apparatus of Claim 29 wherein said data comprises data used
2 for cryptographic security purposes

31. The apparatus of Claim 29 wherein said data comprises data used to
2 request re-transmission of compressed information received at said presentation
system with errors.

32. The apparatus of Claim 31 further comprising means for re-
2 transmitting compressed information having been received at said presentation
system with errors over said two-way link.

33. The apparatus of Claim 29 wherein said data comprises various
2 monitor and control inputs and commands transferred between said central
facility and presentation systems.

34. The apparatus of Claim 29 wherein said two-way link comprises a
2 dedicated telephone data link.

35. The apparatus of Claim 29 wherein said two-way link comprises a
2 dialup telephone data link.

36. The apparatus of Claim 29 wherein said two-way link comprises a
2 packet type data link.

37. The apparatus of Claim 29 wherein said two-way link comprises an
2 Internet based link.

38. The apparatus of Claim 29 wherein said two-way link comprises a
2 wireless data link.

39. The apparatus of Claim 29 wherein said two-way link comprises a
2 satellite based data link.

40. The apparatus of Claim 1 further comprising a network
2 management system for managing a network of presentation systems to present
images for viewing at authorized times and locations.

41. The apparatus of Claim 40 wherein said network management
2 system provides operational control of each presentation system.

42. The apparatus of Claim 2 wherein each presentation system
2 comprises a theater with at least one auditorium.

43. The apparatus of Claim 42 wherein compressed information is
2 broadcast to pre-selected auditoriums within a multiplicity of auditoriums in a
theater complex at a given time.

44. The apparatus of Claim 42 further comprising at least one
2 decoder/decrypter integrated into each image projector within said auditorium
to prevent wiretapping and copying of images.

45. The apparatus of Claim 44 further comprising means for detecting
2 physical intrusion into a projection system for an auditorium system and for
erasure of decryption key information whenever such an intrusion is detected.

Dub A1 46. The apparatus of Claim 42 wherein at least one theater comprises a
2 complex of multiple auditoriums and said central storage system is configured to
transfer compressed information of a single image program to different ones of
4 said auditoriums with preselected programmable offsets in time relative to each
other

47. The apparatus of Claim 46 wherein said preselected programmable
2 offsets are substantially zero so that said single image program is presented to
different ones of said auditoriums substantially simultaneously.

48. The apparatus of Claim 42 further comprising a central theater
2 storage system for storing compressed information which is to be used for
creating presentation events at one or more auditoriums.

49. The apparatus of Claim 48 wherein said central theater storage
2 system comprises a data storage bank shared by multiple auditoriums.

50. The apparatus of Claim 49 wherein said data storage bank
2 comprises an array of magnetic media storage devices.

51. The apparatus of Claim 50 wherein said array of storage devices
2 comprises means for using parity information to link different preselected
portions of compressed information to different ones of said devices during
4 storage and to a single presentation at retrieval.

52. The apparatus of Claim 50 wherein said central theater storage
2 system comprises means for parallel "striping" of received information across
said array of storage devices to provide a desired data transfer rate and error
4 protection redundancy.

53. The apparatus of Claim 50 further comprising means for storing a
2 viewing history of authorized programs presented in said auditorium and for
reporting said history to said central facility.

54. The apparatus of Claim 40 further comprising theater management
2 system for operational control and monitoring of auditoriums within a theater
complex.

55. The apparatus of Claim 54 wherein said theater management
2 system further comprises program control means for creating program sets from
one or more received individual image and audio programs, which are
4 scheduled for presentation on an auditorium system during an authorized
interval.

56. The apparatus of Claim 54 further comprising means for
2 automatically distributing, storing, and presenting programs under
programmable control from said central facility.

57. The apparatus of Claim 54 further comprising means for automatically distributing, storing, and presenting programs under programmable control from a control element remote from said central facility

58. The apparatus of Claim 54 further comprising means for controlling certain preselected network operations from a location remote from said central facility.

59. The apparatus of Claim 54 further comprising a local theater network system for distributing stored information to one or more of a multiplicity of auditorium locations for presentation to an audience.

60. The apparatus of Claim 59 comprising at least one local area network interface.

61. The apparatus of claim 2 wherein the image information is provided in the form of image programs which are in the form of either a single still frame or series of frames shown as motion pictures of varying length.

62. The apparatus of Claim 2 wherein said means for transfer comprises at least one optical fiber network.

63. The apparatus of Claim 2 wherein said means for transfer comprises at least one high speed wireline based network.

64. The apparatus of Claim 2 wherein said means for transfer comprises means for wireless broadcast of signals containing said compressed information.

65. The apparatus of Claim 2 wherein said means for transfer comprises:

means for storing compressed digital information in said central facility;
4 means for retrieving said stored information onto a transportable storage
medium for physical distribution to said presentation systems; and
6 means for retrieving said stored information on said medium and
transferring it to said presentation system storage

66. The apparatus of Claim 65 wherein said medium comprises optical
2 storage medium.

67. The apparatus of Claim 65 wherein said medium comprises
2 magnetic storage medium.

68. The apparatus of Claim 65 further comprising means for archiving
2 said medium at said central facility.

69. The apparatus of Claim 65 further comprising means for archiving
2 said medium at said presentation system.

70. A method for distribution of digitized image, of either still or
2 motion type, information to viewing locations comprising:

4 receiving and compressing said digitized image information according to
a preselected format at at least one central facility;

6 transferring resulting compressed image information to one or more
remotely located presentation systems;

8 receiving and storing transferred image information for presentation at at
least one preselected time each presentation system;

10 distributing stored compressed image information to one or more
decompression systems;

12 decompressing transferred image information in each decompression
system; and

14 receiving decompressed image information at at least one connected projection system and presenting visual images to one or more viewers based on said received information.

71. The method of Claim 70 wherein said at least one central facility is
2 further configured for receiving and compressing digitized audio information
according to a preselected format, and further comprising:

4 distributing stored compressed audio information to one or more
decompression systems;

6 decompressing transferred audio information in each decompression system; and

8 receiving decompressed audio information at at least one connected
sound system and presenting it to one or more listeners based on said received
10 information.

72. The method of Claim 71 further comprising storing said
2 compressed image and audio information in a non contiguous manner
independent of each other.

73. The method of Claim 70 wherein said step of compressing said
2 digitized image information occurs at a variable rate.

74. The method of Claim 70 wherein said step of compressing said
2 digitized audio information occurs at a variable rate.

75. The method of Claim 70 wherein said step of compressing
2 information is performed remotely from the central facility.

76. The method of Claim 71 further comprising compressing and
2 transferring audio programs associated with image information segregated in
time from an associated image using an identifier to allow linking of one or

4 more preselected audio programs with at least one preselected image program as
desired at presentation.

77. The method of Claim 76 wherein each of said audio programs
2 comprise multiple audio tracks to be presented with the same image program
during different presentation events.

78. The method of Claim 70 further comprising generating images in
2 digital format using a digital image generation system.

79. The method of Claim 78 comprising using a digital camera.

80. The method of Claim 79 further comprising capturing, compressing
2 and broadcasting images from said digital camera to preselected authorized
presentation systems through said central facility substantially contemporaneous
4 with digitizing of images.

81. The method of Claim 78 comprising using a computer based
2 workstation.

82. The method of Claim 71 further comprising storing compressed
2 image and audio information in said central facility for transfer at a later
predetermined time.

83. The method of Claim 71 further comprising encrypting said
2 information at said central facility and decrypting resulting encrypted
information at said presentation system.

84. The method of Claim 83 further comprising storing and
2 transporting cryptographic key information necessary for decryption to

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authorized presentation systems at a time separate from transfer of encrypted
4 information.

85. The apparatus of Claim 83 further comprising indicating a time
2 interval over which said cryptographic key information is valid and assuring
that said key is only used during that interval.

86. The apparatus of Claim 85 further comprising overwriting said
2 cryptographic key information in a storage location after said time interval
expires.

87. The method of Claim 71 further comprising adding at least one
2 watermark which is perceptually unnoticeable during presentation of
decompressed image or audio information at a predefined normal rate of
4 transfer, but is detectable when said image or audio information is presented at a
rate substantially different from said normal rate.

88. The method of Claim 87 comprising configuring said watermark to
2 identify both a presentation time and a location for image or audio information.

89. The method of Claim 71 further comprising modulating and
2 transmitting compressed information over a wireless communication link
between said central facility and presentation systems.

90. The method of Claim 89 comprising broadcasting said compressed
2 information to any one or more of a plurality of theater auditoriums to allow
multiple presentations of information in different auditoriums at the same
4 time.

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91. The method of Claim 89 comprising using a transmission bit rate for compressed information that is not equal to a bit rate at which said information is compressed.

92. The method of Claim 89 comprising using a transmission bit rate for compressed information is equal to a bit rate at which said information is compressed.

93. The method of Claim 89 comprising appending checksum information is appended to said compressed information so as to allow detection of blocks of transmitted information in which transmission errors occur.

94. The method of Claim 89 comprising using at least one satellite for transferring signals to said presentation systems.

95. The method of Claim 94 further comprising collocating at least one satellite receiver terminal at said central facility and monitoring quality of a satellite channel used for transferring compressed information therewith, so as to allow adjusting transfer characteristics of said satellite channel to maintain a desired level of quality.

96. The method of Claim 71 further comprising exchanging data over a two-way transfer link disposed between said central facility and presentation systems.

97. The method of Claim 96 comprising using said data for cryptographic security purposes

98. The method of Claim 96 requesting re-transmission of compressed information received at said presentation system with errors.

99. The method of Claim 98 further comprising re-transmitting
2 compressed information having been received at said presentation system with
errors over said two-way link.

100. The method of Claim 96 wherein said data comprises various
2 monitor and control inputs and commands transferred between said central
facility and presentation systems.

101. The method of Claim 96 comprising using a dedicated telephone
2 data link as said two-way link.

102. The method of Claim 96 comprising using a dialup telephone data
2 link as said two-way link.

103. The method of Claim 96 comprising using a packet type data link as
2 said two-way link comprises.

104. The method of Claim 96 comprising using an Internet based link as
2 said two-way link.

105. The method of Claim 96 comprising using a wireless data link as
2 said two-way link.

106. The method of Claim 96 comprising using a satellite based data link
2 as said two-way link.

107. The method of Claim 70 further comprising a network
2 management system for managing a network of presentation systems to present
images for viewing at authorized times and locations.

108. The method of Claim 107 wherein said network management
2 system provides operational control of each presentation system.

109. The method of Claim 71 comprising configuring each presentation
2 system as a theater with at least one auditorium.

110. The method of Claim 109 comprising broadcasting compressed
2 information to pre-selected auditoriums within a multiplicity of auditoriums in
a theater complex at a given time.

111. The method of Claim 109 further comprising integrating at least
2 one decoder/decrypter into each image projector within said auditorium to
prevent wiretapping and copying of images.

112. The method of Claim 111 further comprising detecting physical
2 intrusion into a projection system for an auditorium system and for erasure of
· decryption key information whenever such an intrusion is detected.

113. The method of Claim 109 further comprising transferring
2 compressed information of a single image program from said central storage
system to different ones of said auditoriums in a complex of multiple
4 auditoriums in a theater with preselected programmable offsets in time relative
to each other.

114. The method of Claim 113 comprising reducing said preselected
2 programmable offsets to be substantially zero so that said single image program
is presented to different ones of said auditoriums substantially simultaneously.

115. The method of Claim 109 further storing compressed information
2 which is to be used for creating presentation events at one or more auditoriums
in a central theater storage system.

116. The method of Claim 115 comprising using an array of magnetic
2 media storage devices as said central theater storage system.

117. The method of Claim 116 comprising using parity information to
2 link different preselected portions of compressed information to different ones
of said devices during storage and to a single presentation at retrieval.

118. The method of Claim 116 comprising parallel "striping" of
2 received information across said array of storage devices to provide a desired
data transfer rate and error protection redundancy.

119. The method of Claim 116 further comprising storing a viewing
2 history of authorized programs presented in said auditorium and reporting said
history to said central facility.

120. The method of Claim 107 further comprising controlling the
2 operation of and monitoring auditoriums within a theater complex using a
theater management system.

121. The method of Claim 120 further comprising creating program sets
2 within said theater management system from one or more received individual
image and audio programs, which are scheduled for presentation on an
4 auditorium system during an authorized interval.

122. The method of Claim 120 further comprising automatically
2 distributing, storing, and presenting programs under programmable control
from said central facility.

123. The method of Claim 120 further comprising automatically
2 distributing, storing, and presenting programs under programmable control
from a control element remote from said central facility

124. The method of Claim 120 further comprising controlling certain
2 preselected network operations from a location remote from said central facility.

125. The method of Claim 120 further comprising for distributing stored
2 information to one or more of a multiplicity of auditorium locations for
presentation to an audience over a local theater network system.

126. The method of claim 71 further comprising providing image
2 information in the form of image programs which are in the form of either a
single still frame or series of frames shown as motion pictures of varying length.

127. The method of Claim 71 wherein said transferring step comprises
2 using at least one optical fiber network.

128. The method of Claim 71 wherein said transferring step comprises
2 using at least one high speed wireline based network.

129. The method of Claim 71 wherein said transferring step comprises:
2 storing compressed digital information in said central facility;
retrieving said stored information onto a transportable storage medium
4 for physical distribution to said presentation systems; and
retrieving said stored information on said medium and transferring it to
6 said presentation system storage

130. The method of Claim 129 wherein said medium comprises optical
2 storage medium.

131. The method of Claim 129 wherein said medium comprises
2 magnetic storage medium.

132. The method s of Claim 129 further comprising archiving said
2 medium at said central facility

133. The method of Claim 129 further comprising archiving said
2 medium at said presentation system.

134. The method of Claim 71 wherein said transferring step comprises
2 using at least one high speed wireline based network.

135. The method of Claim 71 comprising employing redundancy in
2 said central facility and presentation systems for preselected functions for
assuring reliable operation in a variety of anticipated operating situations.